

XXXI.—*A peculiar State of Development in Brachydesmus (Myriapoda—Polydesmoidea).* By HENRY W. BRÖLEMANN (of Pau, Basses-Pyrénées, France).

My colleague, Richard S. Bagnall, of Penshaw, recently accorded me the advantage of examining some Myriapods collected by himself, including a male representative of the family Polydesmidæ, which appeared to him to be of special interest, and which was taken at Oxford in a mole's nest, together with some other Polydesmids identified (by Bagnall) as *Brachydesmus superus*, Ltz. (both sexes).

The specimen here spoken of is undoubtedly referable to the same genus, *Brachydesmus*, as shown by the shape of the carinæ, etc.; but, although probable, it is difficult to decide as to whether it should be ascribed to Latzel's species or not, as it possesses only 18 body-segments, thus being at the larval stage known as Pullus VI.

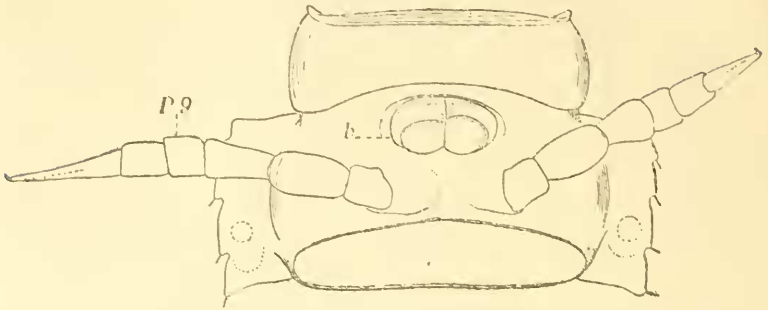
To readers not familiar with the growth of Polydesmids, it might be mentioned that the stage Pullus VI., which is the one before the last for Polydesmids having 20 body-segments, is actually the last larval stage for those provided only with 19, as in the case of *Brachydesmus*. It is a well-known fact that the sexually (and specifically) modified 8th pair of limbs of the male Polydesmids are far from having acquired their normal form in the larva. Until the last moult these organs are to be seen as two low semi-cylindrical buds (fig. 1) pressed closely together and scarcely protruding from the coxal opening located in front of the 9th pair of legs, which latter are normal ambulatory legs.

When isolated and properly prepared, it is possible to detect in these buds some darker, more thickly chitinized regions still destitute of any definite outline; such are at least the only differentiations that have ever been mentioned by authors acquainted with the subject.

It was therefore greatly surprising to come across an utterly different structure in the immature male *Brachydesmus* forming the subject of this note. Instead of the low buds, a large membranous pouch-like body was found to emerge from the coxal aperture (figs. 2 & 3). This was considerably developed transversely, being apparently composed of two pouches fused together. It was gibbous anteriorly and slightly bent backwards so as to present a concave posterior surface, and situate on the apex were

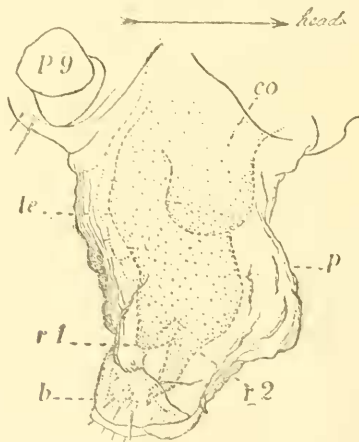
the two semicylindrical buds (*b*) spoken of as met with in normally developed immature males.

Fig. 1.



Ventral view of the 7th segment of an immature *Brachydesmus superus*, Ltz., at its last larval stage, showing the semicylindrical bud-shaped gonapods (*b*) in front of the 9th pair of legs (*P9*).

Fig. 2.



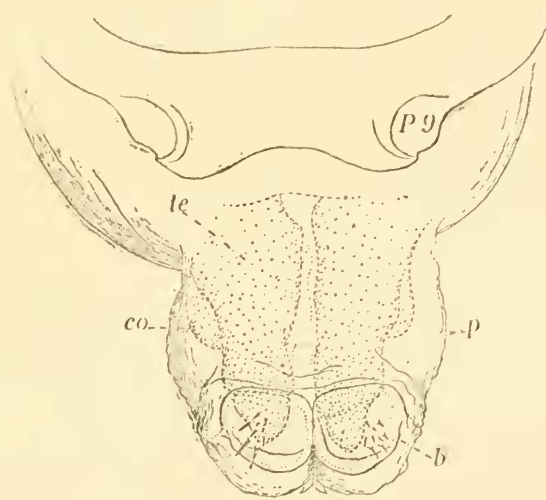
The membranous pouch (*p*) tipped with the semicylindrical buds (*b*), showing the preformed gonapods (dotted).

*co* = coxal process; *te* = telopodite or second joint with its posterior ridge (*r1*) and its anterior process (*r2*). From the side, *P9* = right limb of the 9th pair.

Throughout the transparent membrane of the pouch (*p*) opaque yellow central masses assuming the shape shown in

figures 2 and 3 (dotted parts) could easily be seen. Their development was so advanced that two joints could be distinguished; a basal lateral joint (*co*), the outline of which is very distinct, is the equivalent of the distal coxal process, with the inner face of which articulates the second joint or telopodite (*te*); the base of the coxa dipping in the general cavity of the body is hidden from view. The second joint is almost entirely visible—that is, as far as not concealed by the coxal process. When viewed from the side (fig. 2) it is represented by a rather stoutish stem feebly arched backwards and with a slightly concave posterior surface.

Fig. 3.



The same; posterior surface. (Same lettering as fig. 2.)

It is divided at its second third into a posterior transverse rounded ridge (*r 1*), which is scarcely protruding; and an anterior tapering, antero-posteriorly flattened process (*r 2*), which is longish and angularly directed backwards, overlapping the posterior ridge.

That these organs should be gonapods can by no means be contested; their location and structure leave no room for any other hypothesis. Moreover, should these organs be compared with the gonapods of other full-grown adult Polydesmids, a striking general resemblance will be found

between them. While in the genus *Polydesmus* (20 body-segments) most of the species show gonapods more or less deeply divided into two distinct processes, the great majority of the *Brachydesmus* species (19 body-segments) possess gonapods either undivided at all or but slightly notched, as seen in the adjoined sketches. It is even possible to trace still further homologies in the details of the telopodite. The posterior transverse ridge, for instance, is beyond doubt homologous with the pulvillum-bearing wart of the adult gonapods, and the anterior process with the secondary or tarsal ramus.

It is therefore unquestionable that we have to deal with the case of a larva provided with almost adult male copulatory organs. Such a structure is frequent and even normal with Diplopods of archaic type, such as *Colobognatha* or *Spiroboloidea*; but that it should be witnessed in the highly specialized Polydesmoidea is certainly most striking.

This case is, moreover, of considerable importance if viewed with reference to the part assumed by *Neotenia* in the evolution of Myriapods, as I have just propounded in a pamphlet now in the press ("Travaux du laboratoire maritime de Cette").

XXXII.—*Notes on Fossorial Hymenoptera*.—XXXIII. *On new Ethiopian Species of Psammocharidæ*. By ROWLAND E. TURNER, F.Z.S., F.E.S.

THE study of the Psammocharidæ is much complicated by the strong sexual dimorphism in many groups, by the absolute unreliability of colour distinctions in many species, and by the variability of neururation characters in the same species within certain limits. As the sexes are very rarely taken coupled, certainty as to the pairing is extremely difficult where the sexual dimorphism is strongly developed, but in some cases the neururation affords a good clue. The points of neururation most liable to variation are the point of origin of the cubitus of the hind wing and the comparative length of the abscissæ of the radius; small variations in these points should not be considered as necessarily of specific importance. Colour distinctions are of far less importance, in *Hemipepsis glabratus*, Klug, the fulvous